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4.12 Test of Reactive-tracer Transport

This test verifies that FEHM has correctly implemented reactive-tracer transport. Figures 48 to 52 show that FEHM results are in good agreement with the SORBEQ solutions. The results, compared numerically to the SORBEQ solutions (found in files *sorbeq_out.cons*, *sorbeq_out.fr*, *sorbeq_out.lang*, *sorbeq_out.lin*, and *sorbeq_out.mfr*) are given in Table 54. The maximum absolute error in concentration for the five isotherms was less than 0.0104, and the percent errors were less than 10% when concentrations were greater than 0.1. These results meet the acceptance criteria for this test suite developed in Chapter III.

Table 54. Results of the test of reactive-tracer transport

V&V test	Maximum error	Maximum % error	RMS error
Concentration versus time at the outlet node			
Conservative	0.9809e-02	9.599	0.2936e-03
Linear	0.4474e-02	2.258	0.1798e-03
Langmuir	0.9049e-02	5.486	0.2411e-03
Freundlich	0.6322e-02	6.252	0.2531e-03
Modified Freundlich	0.1040e-01	3.060	0.2269e-03

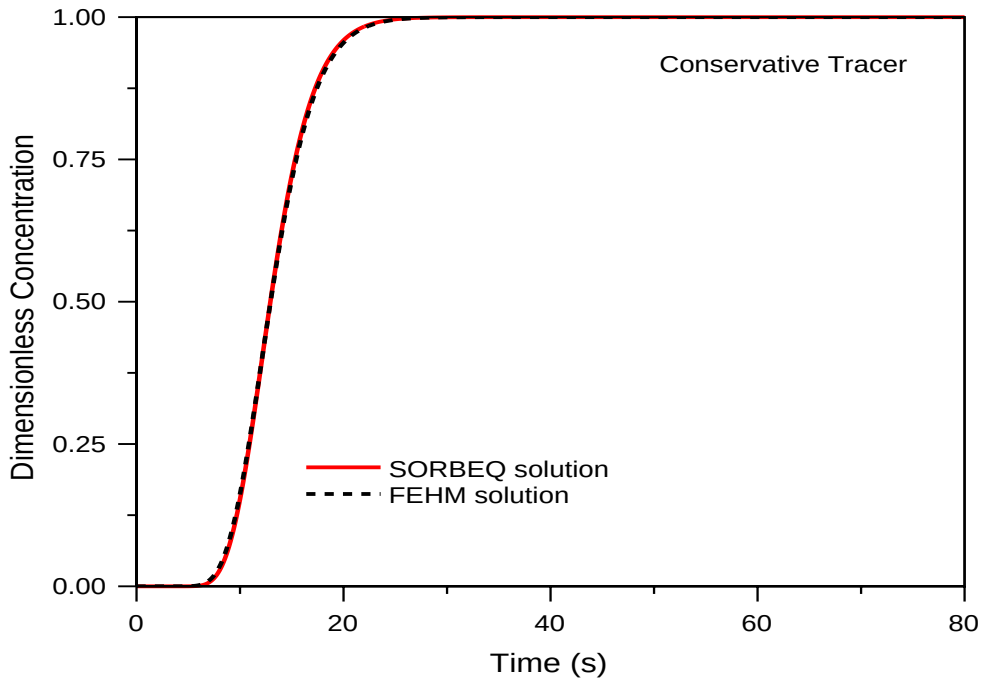

Figure 48. Comparison of FEHM and SORBEQ outlet concentrations for the conservative tracer.

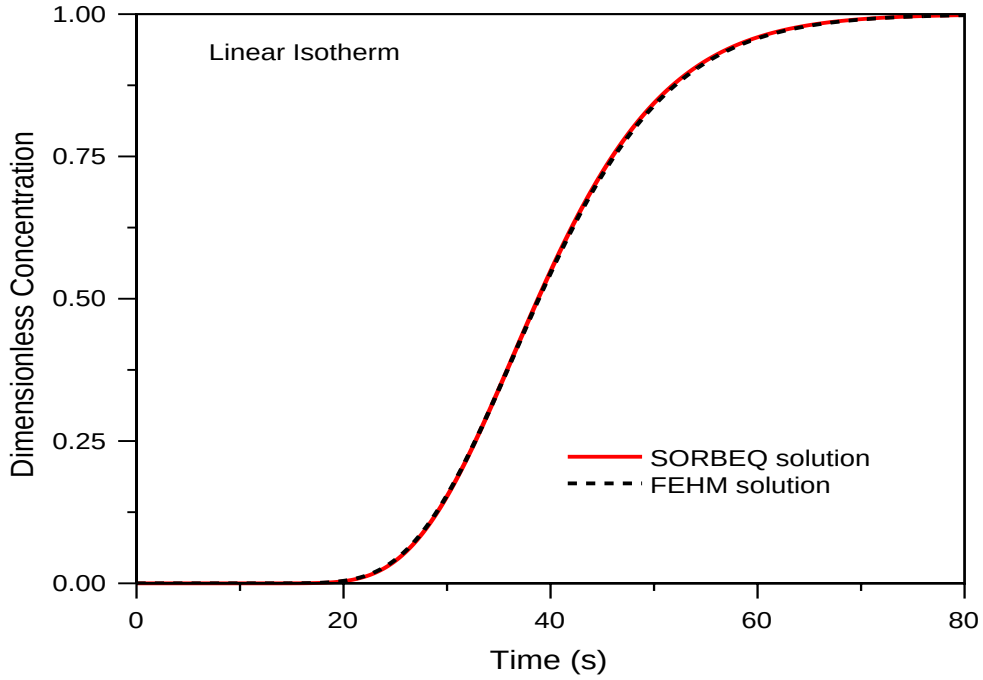

Figure 49. Comparison of FEHM and SORBEQ outlet concentrations for the linear isotherm.

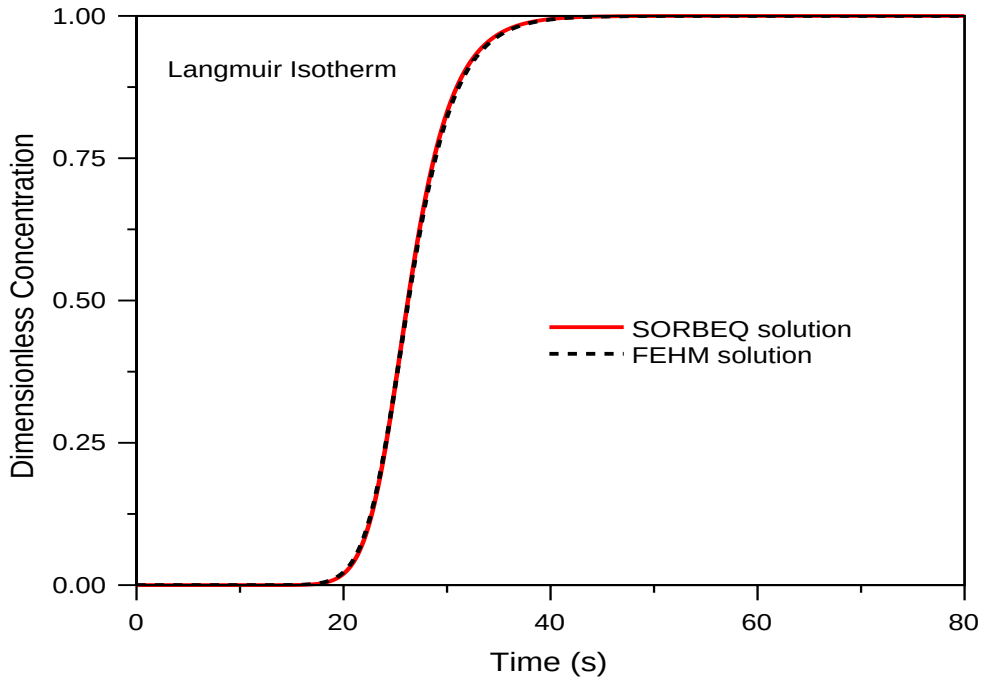

Figure 50. Comparison of FEHM and SORBEQ outlet concentrations for the Langmuir isotherm.

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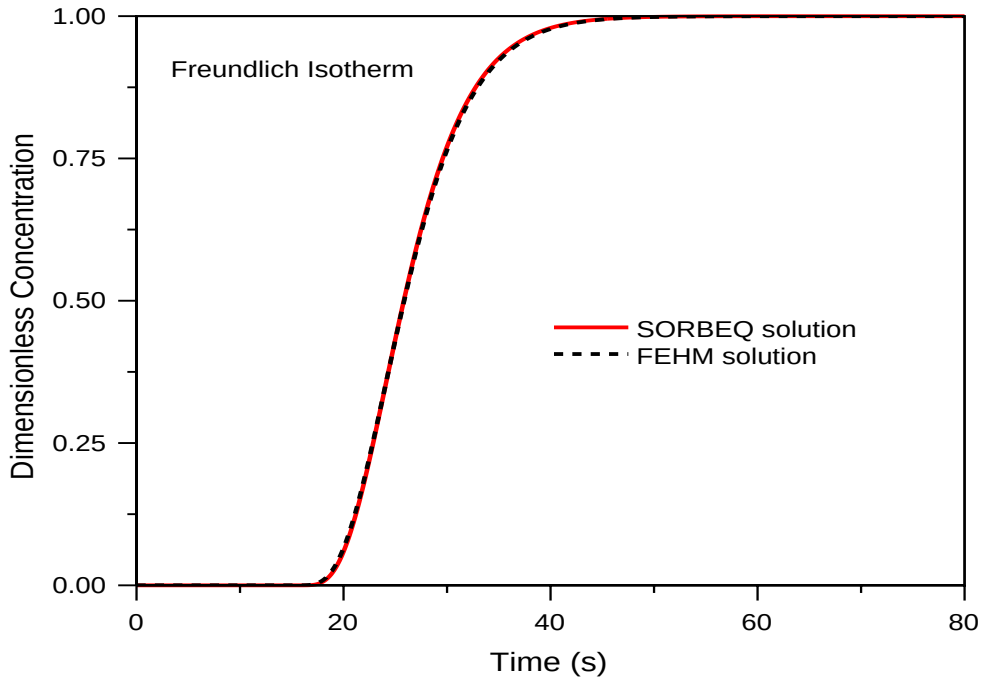

Figure 51. Comparison of FEHM and SORBEQ outlet concentrations for the Freundlich isotherm.

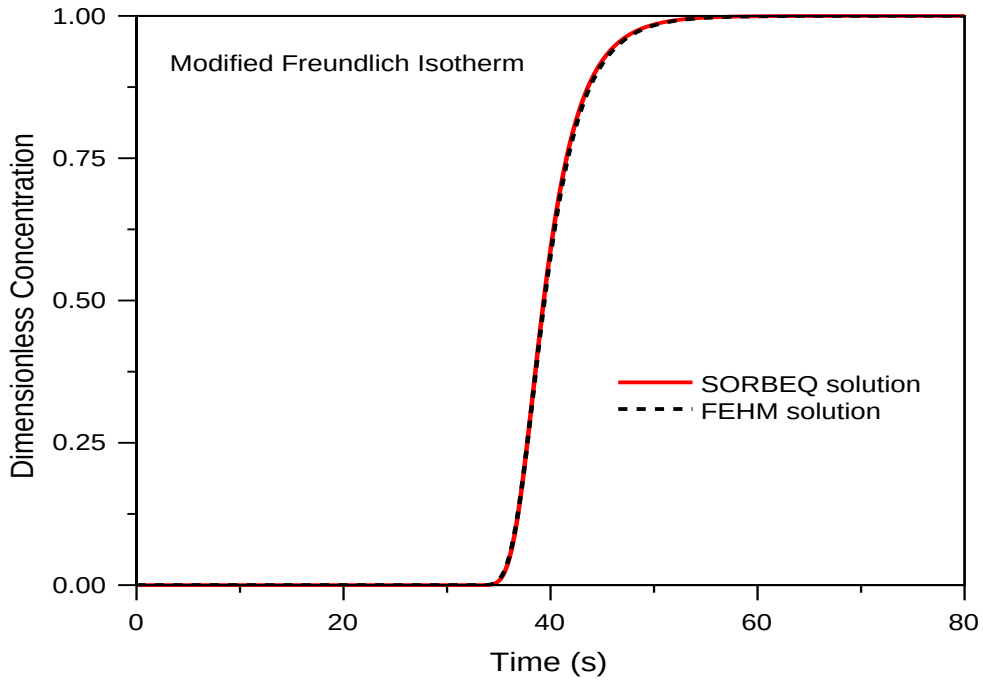

Figure 52. Comparison of FEHM and SORBEQ outlet concentrations for the modified Freundlich isotherm.